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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,358	12/09/2003	Satofumi Kinei	900-484	1789

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EXAMINER
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MOORE, KARLA A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/730,358

Applicant(s)

KINEI, SATOFUMI

Examiner

Karla Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,543,576 to Hieber et al. in view of U.S. Patent No. 4,975,252 to Nishizawa et al.
3. Heiber et al. disclose a semiconductor device production apparatus substantially as claimed in Figures 1-5 and comprising: a rotary table section (7, abstract) including a rotary table for supporting a wafer (1) thereon; a chamber (22) for housing the rotary table section; a heater (abstract and column 3, rows 67-68) for heating the wafer; a multi-part temperature sensing element (2-6, 14 and 15) for sensing the temperature of the wafer; temperature measuring section (25) for converting the sensed temperature into a first signal to output the first signal; and a signal generating section (26) for converting the output first signal into a second signal detectable from outside the chamber (via transmitter 27); wherein the temperature sensing element, the temperature measuring section and the signal generating section are attached to the rotary table section (each is arranged in measuring system, 18, attached to pallet 7), and a distal end of the temperature sensing element projects outwardly from a surface of the rotary table so as to be brought into close relation to or in to contact with a bottom surface of the wafer. In Heiber et al., each of sensing parts 3-6 projects outwardly from a surface of the rotary table so as to be brought in close relation to a bottom surface of the wafer via low resistance contacts.
4. However, Heiber et al. fail to explicitly teach the heater provided in the chamber.
5. Nishizawa et al. teach that it is known in the art to provide a substrate heater structures inside or outside a processing chamber during a deposition process (column 6, rows 40-46 and column 8, rows 15-22).

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6. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the substrate heater either inside or outside the deposition chamber in Heiber et al. as is known in the art as taught by Nishizawa et al.

7. With respect to claim 2, Heiber et al. fail to teach the temperature sensing element comprises a thermocouple.

8. Nishizawa et al. disclose the use of thermocouple for measuring the temperature of a substrate during processing (column 4, rows 29-32).

9. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a thermocouple as the temperature sensing device in Heiber et al. in order to measure the temperature of the substrate as taught by Nishizawa et al.

10. With respect to claim 4, as noted above, the signal generating section comprises a wireless transmitter (27).

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heiber et al. and Nishizawa et al. as applied to claims 1-2 and 4, and further in view of U.S. Patent Pub. No. 2003/0168171 A1 to Tanaka et al.

12. Heiber et al. and Nishizawa et al. disclose the invention substantially as claimed and as described above.

13. However, Heiber et al. and Nishizawa et al. fail to teach the signal generating section comprises a detachable storage device.

14. Tanaka et al. teach the use of a detachable storage device in processing data associated with semiconductor manufacturing processes for the purpose of advantageously reducing the load on a data collecting device and for easily controlling collected data (paragraphs 44-48).

15. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the signal generating section comprising a detachable storage device in

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Hieber et al. and Nishizawa et al. in order to advantageously reduce the load on the data collecting device and easily control collected data as taught by Tanaka et al.

16. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hieber et al. and Nishizawa et al. as applied to claims 1-2 and 4, and further in view of U.S. Patent No. 4,683,143 to Riley.

17. Heiber et al. and Nishizawa et al. disclose the invention substantially as claimed and as described above.

18. However, Heiber et al. and Nishizawa et al. fail to teach the signal generating section comprises a display device.

19. Riley teach the use of a display device for displaying processing conditions for the purpose of periodically updating a user regarding the status of a process while controlling a process (column row row 57, through column 2, row 5).

20. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a display device in Heiber et al. and Nishizawa et al. in order to periodically update a user regarding the status of a process while controlling the process as taught by Riley.

21. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hieber et al., Nishizawa et al. and Tanaka et al. as applied to claim 3, and further in view of U.S. Patent No. 4,683,143 to Riley.

22. Heiber et al., Nishizawa et al. and Tanaka disclose the invention substantially as claimed and as described above.

23. However, while Heiber et al. do disclose the use of a computer/storage data reader (30) for accepting measured data from the apparatus, wherein the computer is located outside the chamber; Heiber et al., Nishizawa et al. and Tanaka et al. fail to explicitly teach the apparatus further comprises a heater controlling section, also provided outside the chamber.

24. Riley discloses the use of a heater controller located outside a processing chamber for the purpose of controlling internal heaters used to regulate temperature of a processing apparatus (column 3, rows 47-56).

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25. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heater controller in Heiber et al., Nishizawa et al. and Tanaka et al. in order to control internal heaters used to regulate temperatures of the processing apparatus as taught by Riley.

26. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hieber et al. and Nishizawa et al. as applied to claims 1-2 and 4, and further in view of U.S. Patent No. 4,683,143 to Riley.

27. Heiber et al. and Nishizawa et al. disclose the invention substantially as claimed and as described above.

28. However, while Heiber et al. do disclose a receiver (29) for receiving the wireless signal from the transmitter, wherein the receiver is located outside the chamber; Heiber et al. and Nishizawa et al. fail to explicitly teach the apparatus further comprises a heater controlling section, also provided outside the chamber.

29. Riley discloses the use of a heater controller located outside a processing chamber for the purpose of controlling internal heaters used to regulate temperature of a processing apparatus (column 3, rows 47-56).

30. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heater controller in Heiber et al. and Nishizawa et al. in order to control internal heaters used to regulate temperatures of the processing apparatus as taught by Riley.

31. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hieber et al. and Nishizawa et al. as applied to claims 1-2 and 4, and further in view of U.S. Patent No. 5,695,564 to Imahashi.

32. Hieber et al. and Nishizawa et al. disclose the invention substantially as claimed and as described above.

33. However, Hieber et al. and Nishizawa et al. fail to teach a cooling section capable of cooling at least one of the temperature measuring section and the signal generating section.

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34. Imahashi teaches providing a cooling section including a circulating system of cooling fluid for the purpose of cooling a substrate table and the substrate it supports down to a desired temperature (column 8, row 64 through column 9, row 1). All other structures attached to the substrate table such as the temperature measuring system of Hieber et al. would be cooled as well, since they are attached and/or in contact with the table and substrate.

35. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a cooling section including a circulating system of cooling fluid in Hieber et al. and Nishizawa et al. in order to cool the table and its associated (surrounding) structures down to a desired temperature as taught by Nishizawa et al.

36. Examiner realizes that Imahashi teaches that the cooling fluid may be nitrogen, for example, rather than water. However, one of ordinary skill in the art would realize that cooling water could be used for this purpose as well. Also, elsewhere in the disclosure Imahashi teach that water may be used as a cooling fluid in the substrate processing system. See column 10, rows 23-26 and column 12, rows 58-61. Further, the courts have ruled that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

37. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,543,576 to Hieber et al. in view of U.S. Patent No. 4,975,252 to Nishizawa et al. and U.S. Patent No. 5,695,564 to Imahashi.

38. Heiber et al. disclose a semiconductor device production apparatus substantially as claimed in Figures 1-5 and comprising: a rotary table section (7, abstract) including a rotary table for supporting a wafer (1) thereon; a chamber (22) for housing the rotary table section; a heater (abstract and column 3, rows 67-68) for heating the wafer; a multi-part temperature sensing element (2-6, 14 and 15) for sensing the temperature of the wafer; temperature measuring section (25) for converting the sensed temperature into a first signal to output the first signal; and a signal generating section (26) for converting the output first signal into a second signal detectable from outside the chamber (via transmitter 27); wherein the

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temperature sensing element, the temperature measuring section and the signal generating section are attached to the rotary table section (each is arranged in measuring system, 18, attached to pallet 7), and a distal end of the temperature sensing element projects outwardly from a surface of the rotary table so as to be brought into close relation to or in to contact with a bottom surface of the wafer. In Heiber et al., each of sensing parts 3-6 projects outwardly from a surface of the rotary table so as to be brought in close relation to a bottom surface of the wafer via low resistance contacts.

39. However, Heiber fail et al. fail to explicitly teach the heater provided in the chamber.

40. Nishizawa et al. teach that it is known in the art to provide substrate heater structures inside or outside a processing chamber during a deposition process (column 6, rows 40-46 and column 8, rows 15-22).

41. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the substrate heater either inside or outside the deposition chamber in Heiber et al. as is known in the art as taught by Nishizawa et al.

42. Hieber et al. and Nishizawa et al. disclose the invention substantially as claimed and as described above.

43. However, Hieber et al. and Nishizawa et al. fail to teach a cooling section capable of cooling at least one of the temperature measuring section and the signal generating section.

44. Imahashi teaches providing a cooling section including a circulating system of cooling fluid for the purpose of cooling a substrate table and the substrate it supports down to a desired temperature (column 8, row 64 through column 9, row 1). All other structures attached to the substrate table such as the temperature measuring system of Hieber et al. would be cooled as well, since they are attached and/or in contact with the table and substrate.

45. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a cooling section including a circulating system of cooling fluid in Hieber et al. and Nishizawa et al. in order to cool the table and its associated (surrounding) structures down to a desired temperature as taught by Nishizawa et al.



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46. Examiner realizes that Imahashi teaches that the cooling fluid may be water, for example, rather than water. However, one of ordinary skill in the art would realize that cooling water could be used for this purpose as well. Also, elsewhere in the disclosure Imahashi teach that water may be used as a cooling fluid in the substrate processing system. See column 10, rows 23-26 and column 12, rows 58-61. Further, the courts have ruled that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

### ***Response to Arguments***

47. Applicant's arguments filed 28 November 2005 have been fully considered but they are not persuasive. Contrary to Applicant's position, Hieber et al. do actually disclose "a distal end of the temperature sensing element projects outwardly from a surface of the rotary table so as to be brought into close relation to or in contact with a bottom surface of the wafer" as described in the above rejections.

48. Applicant's newly added recitation regarding a cooling section is addressed above using the teachings of Imahashi.

### ***Conclusion***

49. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Karla Moore  
Patent Examiner  
Art Unit 1763  
7 February 2006